

**In the Claims:**

Claims 1-42. (Canceled).

**Please add the claims:**

43 - 48, as detailed below

What is claimed is:

43 (new). A new method for the synthesizing of chlorin e6-transferrin, consisting essentially of:

- [a] preparing a reaction solution, comprising a buffer solution containing a detergent, wherein said buffer solution is comprising: 20 mM  $\text{Na}_2\text{HPO}_4$ , adjusted to pH 7.4 with  $\text{KH}_2\text{PO}_4$ , wherein said detergent is comprising: 2 mM of 3-[(3-cholidamidopropyl) dimethylammonio]- 1-propanesulfonate and,
- [b] preparing a transferrin solution, by using a process comprising one wherein a transferrin is dissolved in said reaction solution, wherein said transferrin is comprising human holo-transferrin and,
- [c] preparing an activated chlorin e6 by using a process comprising one wherein chlorin e6 in said reaction solution is reacted with an activating compound, wherein said activating compound is comprising: 1-Ethyl-3-[3-dimethylaminopropyl] carbodiimide hydrochloride and,
- [d] preparing an immobilized transferrin, by reacting said transferrin solution to an insoluble material in said reaction solution, wherein said insoluble material is comprising quaternary aminoethyl-sephadex and,

- [d] forming an immobilized chlorin *e6*-transferrin by exposing said immobilized transferrin to said activated chlorin *e6* in said reaction solution and,
  - [e] eliminating all un-reacted soluble components from the immobilized transferrin and,
  - [f] forming a chlorin *e6*-transferrin by releasing of said immobilized chlorin *e6*-transferrin by using a process comprising one wherein said immobilized chlorin *e6*-transferrin is placed in said reaction solution containing 0.5 M NaCl.
  - [g] the placing of said chlorin *e6* transferrin into another solution, by a process comprising dialysis, wherein said solution is comprised of said reaction solution,
- whereby chlorin *e6*-transferrin so synthesized is able to cause the transferrin-dependent growth of cells.
- whereby chlorin *e6*-transferrin so synthesized displays an electrophoretic migration pattern different than that of native transferrin.
- whereby chlorin *e6*-transferrin so synthesized is able to bind to cells in a transferrin-specific manner.
- whereby chlorin *e6*-transferrin so synthesized is able to kill cultured cells through a light-dependent mechanism in a transferrin-specific manner.

44 (new). The method of claim 43, wherein the preparing of said activated chlorin *e6* is performed using a process which is consisting essentially of:

- [a] preparing a chlorin *e6*-EDC solution by combining a chlorin *e6* solution, comprising said chlorin *e6* dissolved in said reaction solution, with an EDC solution, comprising 1-Ethyl-3-[3-dimethylaminopropyl] carbodiimide hydrochloride dissolved in water and,
- [b] exposing said chlorin *e6*-EDC solution to a QAE-sephadex suspension, comprising quaternary aminoethyl-sephadex suspended in said reaction solution, while mixing at 25° C and,
- [c] separating the desired modified-chlorin *e6* from said QAE-sephadex,

whereby the desired modified-chlorin *e6* remains unbound to said QAE-sephadex, and un-desired, un-reacted chlorin *e6* binds to the QAE-sephadex.

45 (new). The method of claim 43, wherein the further purifying of said chlorin *e6*-transferrin is performed by a cation exchange immobilization, consisting essentially of:

- [a] the preparing of a low-pH equilibrated chlorin *e6*-transferrin by a process comprising placing said chlorin *e6*-transferrin in a low pH solution, wherein said low pH solution is comprising: 25 mM sodium acetate, pH 4.8 and,

- [b] the preparing of a negatively-charged matrix, by a process comprising one wherein sulfo-propyl sephadex is placed in said low-pH solution and,
  - [c] the preparing of cation-immobilized chlorin *e6*-transferrin by combining said low-pH equilibrated chlorin *e6*-transferrin with said low pH-equilibrated negatively-charged matrix and,
  - [d] the removing of soluble material from said negatively-charged matrix and,
  - [e] the forming of a further purified chlorin *e6* transferrin by a process comprising one wherein said cation-immobilized chlorin *e6*-transferrin is released, by placing said cation-immobilized chlorin *e6*-transferrin in a high-salt solution, wherein said high salt solution is comprising said reaction solution containing 1.0 M NaCl and,
  - [f] the placing of said further purified chlorin *e6* transferrin into another solution, by a process comprising dialysis, wherein said solution is comprising said reaction solution,
- whereby chlorin *e6*-transferrin binds to the negatively charged matrix and un-desired components do not, and are thus eliminated.

47 (new). The method of claim 43, wherein the using of said chlorin *e6*-transferrin is by a process which comprises the delivering of said chlorin *e6*-transferrin into a system, wherein said system is selected from a group consisting essentially of : tissue cultures, electrophoresis gels, and living organisms.

48 (new). The method of claim 47, wherein the using of said chlorin e6-transferrin is by a process which comprises one wherein chlorin e6-transferrin-binding entities residing in said system are damaged or destroyed by exposure to light.

.49 (new). The method of claim 47, wherein the using of said chlorin e6-transferrin is by a process wherein said wherein said transferrin-binding entities residing in said system are biological cells.